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New distributional record of *Lindernia tamilnadensis* M.G. Prasad & Sunojk from Central India

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ABSTRACT

The present study provides the new distributional records of *Lindernia tamilnadensis* from Bilaspur, Chhattisgarh, India. This is the first state record from central India. A detailed description, illustrations, photographs, and earlier distribution from India are provided here to facilitate identification.

Keywords: *Lindernia tamilnadensis*, Central India, Chhattisgarh, Addition

1. INTRODUCTION

The family Linderniaceae is classified within the order Lamiales, which is one of the largest orders of flowering plants, comprising approximately 22,000 species (Rahmanzadeh et al., 2005). Plants in this family are typically annual, ephemeral herbs, or sub-shrubs with opposite leaves that may have toothed or rarely entire margins. Their inflorescence is racemose, and their corolla features an upper erect lip that is smaller than the lower lip. The stamens usually number four, with two being fertile or two anterior stamens reduced and conspicuously geniculate, zig-zag-shaped, or spurred abaxial filaments. The fruit is typically a capsule (Rahmanzadeh et al., 2005; Devi & Kumar, 2022). The monophyly of Linderniaceae has been confirmed by several studies (Albach et al., 2005; Oxelman et al., 2005; Rahmanzadeh et al., 2005; Schäferhoff et al., 2010; Fischer et al., 2013).

Tropical Africa and Southeast Asia are designated as centres of Linderniaceae diversity (Rahmanzadeh et al., 2005; Schäferhoff et al., 2010). According to the circumscription proposed by Fischer et al., (2013), Linderniaceae comprises 17 genera and 254 species, although suggests 20-25 genera. Early molecular studies indicated that the genus *Lindernia* is non-monophyletic (Rahmanzadeh et al., 2005; Fischer et al., 2013). Fischer, (1999), Lewis, (2000), and Rahmanzadeh et al., (2005) included 100 species in *Lindernia*, distributed across tropical Africa, Madagascar, Southeast Asia, North, Central, and South America, as well as Europe. In India, the genus *Lindernia* is represented by 08 species, 01 subspecies, and 01 variety (Mukherjee, 1945; Sivarajan and Mathew, 1983; Tandyekkal and Mohan, 2010). However, no

comprehensive studies on this genus have been conducted in Chhattisgarh, central India.

2. MATERIALS AND METHODS

During floristic field research in Bilaspur, Chhattisgarh, in March 2024, the first author discovered an intriguing plant species of *Lindernia* at the Kopra reservoir (Figure 1). Through meticulous macroscopic and microscopic examinations of live specimens, as well as referencing relevant literature Prasad and Sunojkumar, (2014), Undirwade, (2020), Patel et al., (2021), the collected specimen was identified as *Lindernia tamilnadensis* M.G. Prasad & Sunojk. Voucher specimens were poisoned, dried, and deposited at the Department of Forestry, Wildlife, and Environmental Sciences, Guru Ghasidas Vishwavidyalaya, Bilaspur, Chhattisgarh, for future reference.

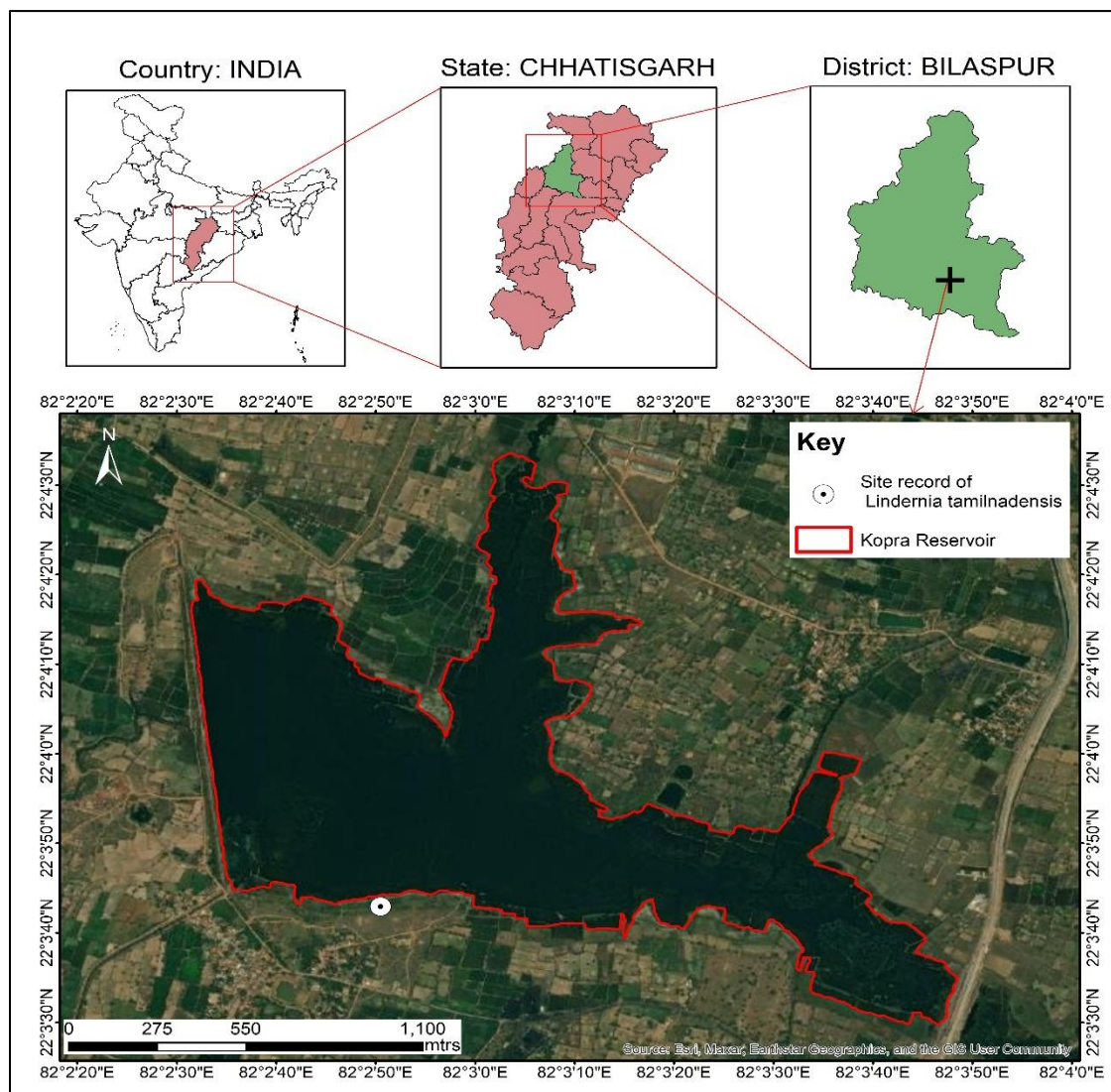


Figure 1 Collection site of *Lindernia tamilnadensis* near Kopra Reservoir, Bilaspur, Chhattisgarh, India

3. RESULTS AND DISCUSSION

Based on the literature review, it was confirmed that this is the first record of *Lindernia tamilnadensis* M.G. Prasad & Sunojk from Chhattisgarh state and a new distributional record of this species in India. Since very limited study (Table 1) has been conducted on this particular species so far, it is possible that further exploration would reveal the distribution of this species as a whole throughout India.

Table 1 Earlier record of *L. tamilnadensis* with present distribution

Sr. No	Previous Record	Place & Date	Source
1	A new species of <i>Lindernia</i> (Linderniaceae) from India	Vijayanarayanam, Tirunelveli district of Tamil Nadu, India, 18/03/2012	Prasad and Sunojkumar, 2014
2	<i>Lindernia tamilnadensis</i> new distributional record for Maharashtra, India	Chalisingaon, Jalgaon, Maharashtra, 2020	Undirwade, 2020
3	<i>Lindernia tamilnadensis</i> M.G. Prasad & Sunojkumar. (Linderniaceae): A new record to the flora of Gujarat state, India	Vijaynagar, Sabarkantha, Gujarat, 29/11/2020	Patel et al., 2021
4	New distributional record of <i>Lindernia tamilnadensis</i> M.G. Prasad & Sunojk from Central India	Kopra, Bilaspur, Chhattisgarh, 02/03/2024	Present Study

Taxonomic Treatment

Lindernia tamilnadensis M.G. Prasad & Sunojk. Figure 2; A-D Type: -INDIA. Tamil Nadu: Tirunelveli district, Vijayanarayanam, 40 m, 18 March 2012, M.G. Prasad & P. Sunojkumar CU117880 (Holotype: CALI; Isotypes: CALI, MH).

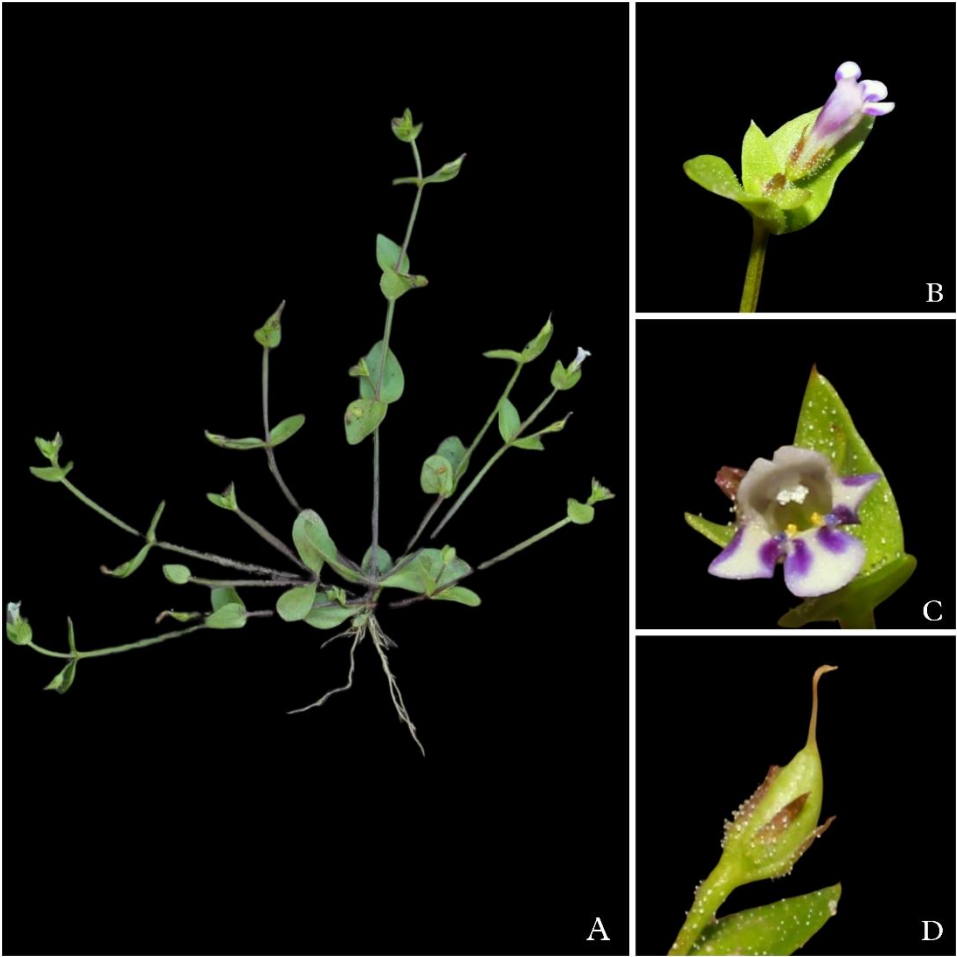


Figure 2 *Lindernia tamilnadensis* M. Prasad & Sunojk.; a. Habit; b. Flower; c. Flower closeup (Front view); d. Capsule

Erect or procumbent tufted herb, up to 15 cm high, rooting from the basal nodes. Stem slender, weak, 4-angled, glabrous, highly branched from the base; internodes about 2.5 cm long. Leaves sessile, 0.5–1.5×0.4–1.2 cm, ovate, base sub-cordate, apex acute or sometimes rounded, margins entire towards the older parts, 2–4 dentate towards the apex, glabrous, basally 3–5 nerved, veins distinct, lamina glandular punctate. Flowers pedicellate, axillary, solitary, alternately on leaf axils, one per node; pedicel slender, ca. 5–12 mm long, 4-angled, glandular hairy; fruiting pedicel glabrous, erect. Calyx 2–2.5 mm long, deeply 5-lobed, glandular hairy outside, glabrous within; lobes lanceolate, 1.5–2×0.3–0.5 mm, apex acute. Corolla 4–5 mm long, 2-lipped, white with pale blue blotches on lower lip; corolla tube cylindrical, 3–4 mm long, glabrous; upper lip 1×1 mm, slightly emarginated at apex, glabrous; lower lip distinctly 3-lobed, lobes 1×1 mm, rounded, glabrous.

Perfect stamens 2, coherent below the upper lip, filaments ca. 1 mm long, glabrous, anthers 2-lobed, lobes ovate, acute. Staminodes 2, linear, ca. 1 mm long, glandular hairy throughout, dense yellow glandular hairs at the base of filaments and corolla tube below, bluish towards apex, hairs 2–3-celled, a distinct spur present just below the staminodal apex. Gynoecium 3–3.2 mm long; ovary 1.0×0.5 mm, bicarpellary, syncarpous ovary, ovate–acute, subglobose, glabrous; style 2 mm long, glabrous; stigma simple, bilobed. Capsule globose, 2.5×2 mm, glabrous, shiny, slightly exceeding the length of persistent calyx. Seeds numerous, minute, 0.3×0.15 mm, bended, golden yellowish, distinctly 5-ridged.

Flowering and Fruiting

October–January.

Distribution

Tamil Nadu, Maharashtra, Gujarat and now in Chhattisgarh.

Habitat

It is found in semi-aquatic habitats in sub-tropical, hot, and humid climate. Commonly seen on moist soil near the wetland.

Specimen Examined

India, Chhattisgarh State, Bilaspur District, Kopra Reservoir, 22.061924 N, 82.04736 E, 263 M Elevation, 02/03/2024, TRN-108.

Notes

L. tamilnadensis is closely related to *L. rotundifolia* but differs mainly in comparatively smaller floral parts, in the absence of trichomes at the base of the anterior corolla lobes, the presence of staminodal appendages, undeflexed fruiting pedicels, and globose capsules.

Ethical Approval

L. tamilnadensis was collected from Kopra reservoir, Bilaspur, Chhattisgarh state, India. The ethical guidelines for plants and plant materials are followed in the study for sample collection and identification.

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Author contribution

Specimen collection and photo plate preparation by the 1st author; draft preparation by the 3rd author; distribution map preparation and proofreading by the 2nd author.

Conflicts of interests:

The authors declare that there are no conflicts of interests.

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Data and materials availability

All data associated with this study are present in the paper.

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